

## CLAIMS

1     1.     A device for sensing pressure, comprising:  
2             a sealed chamber defining part;  
3             a first flexible diaphragm having two sides and mounted on one  
4 side in communication with the chamber in said sealed chamber  
5 defining part, said first flexible diaphragm having a conductive surface;  
6             an insulator mounted on the other side of said first flexible  
7 diaphragm;  
8             a second flexible diaphragm having two sides and mounted on one  
9 side in communication with said insulator, said second flexible  
10 diaphragm having a conductive surface;  
11            a sensor chamber defining part mounted on the other side of said  
12 second flexible diaphragm and having an opening for communication  
13 with a sensing atmosphere, whereby one of said first and second flexible  
14 diaphragms includes openings in its surface to permit fluid to flow  
15 through said openings and the other of said first and second diaphragms  
16 is solid and responds to change in pressure in said sensor chamber to  
17 move away from or toward said one of said flexible diaphragms; and  
18            electrical connections contacting said first and said second flexible  
19 diaphragms and adapted to measure the capacitance between said  
20 diaphragms as a function of the pressure in said sensor chamber  
21 introduced through said opening and causing said one flexible  
22 diaphragms to move with respect to the other of said flexible  
23 diaphragms.

1 2. The device of claim 1, wherein insulator is a solid, non conductive  
2 spacer.

1 3. The device of claim 1, wherein said fluid is selected from liquids  
2 and gases.

1 4. The device of claim 1, wherein said first said first and second  
2 flexible diaphragms includes conductive surfaces and electrical contact  
3 points.

1 5. The device of claim 4, wherein said first said first and second  
2 flexible diaphragms further includes dielectric film thereon.

1 6. The device of claim 1, wherein said second flexible diaphragm  
2 includes openings it its surface to permit fluid to flow through said  
3 openings and said first diaphragm is solid and responds to change in  
4 pressure in said sensor chamber means to move away from or toward  
5 said second flexible diaphragm means for detecting positive pressure.

1 7. The device of claim 1, wherein said first flexible diaphragm  
2 includes openings it its surface to permit fluid to flow through said  
3 openings and said second diaphragm is solid and responds to change in  
4 pressure in said sensor chamber to move away from or toward said  
5 second flexible diaphragm for detecting negative pressure.

1 8. A device for sensing pressure, comprising:  
2 sealed chamber means for defining a sealed chamber;  
3 first flexible diaphragm means for mounting in communication  
4 with said sealed chamber means, said first flexible diaphragm means  
5 having a conductive surface;  
6 insulator means for insulating said first diaphragm and being  
7 mounted on the other side of said first flexible diaphragm means;  
8 second flexible diaphragm means for mounting in communication  
9 with said insulator means, said second flexible diaphragm means having  
10 a conductive surface;  
11 sensor chamber means for communicating with a sensing  
12 atmosphere and mounted on the other side of said second flexible  
13 diaphragm means; and  
14 electrical connection means for measuring the capacitance  
15 between said first and said second flexible diaphragm means as a  
16 function of the pressure in said sensor chamber means introduced  
17 through said opening.

1 9. The device of claim 8, wherein said insulator means is a solid, non  
2 conductive spacer means for separating said first and second flexible  
3 diaphragm means.

1 10. The device of claim 8, wherein said fluid is selected from liquids  
2 and gases.

1 11. The device of claim 8, wherein said first said first and second  
2 flexible diaphragm means include conductive surfaces and electrical  
3 contact points.

1 12. The device of claim 11, wherein said first said first and second  
2 flexible diaphragm means further includes dielectric film thereon.

1 13. The device of claim 8, wherein said second flexible diaphragm  
2 means includes openings it its surface to permit fluid to flow through  
3 said openings and said first diaphragm means is solid and responds to  
4 change in pressure in said sensor chamber means to move away from or  
5 toward said second flexible diaphragm means for detecting positive  
6 pressure.

1 14. The device of claim 8, wherein said first flexible diaphragm means  
2 includes openings it its surface to permit fluid to flow through said  
3 openings and said second diaphragm means is solid and responds to  
4 change in pressure in said sensor chamber means to move away from or  
5 toward said first flexible diaphragm means for detecting negative  
6 pressure.

1 15. A method for sensing pressure in a sensing atmosphere,  
2 comprising the steps of:

3 exposing a sensor to said sensing atmosphere by a sensor device  
4 having two ends, said sensor device having an opening at one end for  
5 communication with said sensing atmosphere, said opening forming part  
6 of a sensor chamber defining part;

7 a sealed chamber defining part forming the other end of said  
8 device;

9 said device having a first flexible diaphragm having two sides and  
10 mounted on one side in communication with the chamber in said sealed  
11 chamber defining part, said first flexible diaphragm having a conductive  
12 surface;

13 said device having an insulator on the other side of said first  
14 flexible diaphragm;

15 said device having a second flexible diaphragm having two sides  
16 and mounted on one side in communication with said insulator, said  
17 second flexible diaphragm having a conductive surface;

18 said sensor chamber defining part being mounted on the other  
19 side of said second flexible diaphragm;

20 providing one of said first and second flexible diaphragms with  
21 openings in its surface to permit fluid to flow through said openings and  
22 the other of said first and second diaphragms being solid and responsive  
23 to change in pressure in said sensor chamber to move away from or  
24 toward said one of said flexible diaphragms;

25 making electrical connections contacting said first and said  
26 second flexible diaphragms and measuring the capacitance between said  
27 diaphragms as a function of the pressure in said sensor chamber

28 introduced through said opening and causing said one flexible  
29 diaphragms to move with respect to the other of said flexible  
30 diaphragms; and  
31 noting the pressure in said sensing atmosphere as a function of  
32 said capacitance.

1 16. The method of claim 15, wherein said fluid is selected from  
2 liquids and gases.

1 17. The method of claim 15, wherein said first said first and second  
2 flexible diaphragms includes conductive surfaces and electrical contact  
3 points.

1 18. The method of claim 17, wherein said first said first and second  
2 flexible diaphragms further includes dielectric film thereon.

1 19. The method of claim 15, wherein said second flexible diaphragm  
2 includes openings it its surface to permit fluid to flow through said  
3 openings and said first diaphragm is solid and responds to change in  
4 pressure in said sensor chamber means to move away from or toward  
5 said second flexible diaphragm means for detecting positive pressure.

1 20. The method of claim 15, wherein said first flexible diaphragm  
2 includes openings it its surface to permit fluid to flow through said  
3 openings and said second diaphragm is solid and responds to change in

- 4 pressure in said sensor chamber to move away from or toward said
- 5 second flexible diaphragm for detecting negative pressure.